

CLAIMS

Sub B37

1. Heat exchanger (2) comprising an exchanger block or
a number of aligned exchanger blocks (20), where
fluids are circulated in a heat-exchange
relationship, at least one face of each block
comprising inlet openings (204) for at least one of
the fluids, the inlet openings in the same face of
each block for this fluid being in communication
with the interior space of the same fluid supply
box (21) which runs alongside (the said face)
thereof, and which communicates with at least one
analogous box of an adjacent block if there is one,
to form a fluid supply line, the exchanger being
characterized in that the fluid supply line
contains at least one grating (30) arranged across
the line and having through-perforations (301) and
solid parts (302) which are distributed in such a
way as to create, at locations on the surface of
the grating, pressure drops which are such that the
flow velocities of the fluid in the inlet openings
downstream of the grating (30) have similar values,
and the distribution of the fluid in the inlet
openings (204) and in the supply line downstream of
the grating (30) and upstream in the vicinity
thereof, is approximately uniform.
2. Heat exchanger according to Claim 1, characterized
in that the grating (30) has perforations
distributed non-uniformly over its surface.
3. Heat exchanger according to Claim 2, characterized
in that the grating (30) has through-perforations
(301) with a degree of perforation on its surface
which varies over its surface approximately in the
opposite direction to the value of the flow
velocities at the same locations in the absence of
the grating.

4. Heat exchanger according to Claim 3, characterized in that the degree of perforation varies over the surface of the grating (30) substantially in inverse proportion to the flow velocities at the same locations in the absence of the grating.
5. Heat exchanger according to any one of Claims 2 to 4, characterized in that the grating (30) has several juxtaposed regions each having one same degree of perforation on their surfaces, and respective degrees of perforation that differ from one region to an adjacent region.
6. Heat exchanger according to any one of Claims 2 to 5, characterized in that the grating (30) has at least one region consisting of a notch or a cut-out.
7. Heat exchanger according to any one of Claims 2 to 6, characterized in that the grating (30) has at least one continuous region with no perforations representing a substantial fraction of its area.
8. Heat exchanger according to any one of Claims 1 to 7, characterized in that the grating (30) extends over a cross section of the line.
9. Heat exchanger according to any one of Claims 1 to 8, characterized in that the grating (30) extends over a cross section of the line at right angles to its axis.
10. Heat exchanger according to any one of Claims 1 to 8, characterized in that the grating (30) is arranged at an angle in the supply line.
11. Heat exchanger according to any one of Claims 1 to 10, characterized in that the grating (30) extends

over the entire area of a cross section of the line.

- 5 12. Heat exchanger according to any one of Claims 1 to 10, characterized in that the grating (30) extends over an area smaller than a cross section of the line.
- 10 13. Heat exchanger according to any one of Claims 1 to 12, comprising a supply line having a tapping (211) exhibiting a circular cross section at right angles to its axis and connected to supply boxes (21) having a semicircular cross section at right angles to their axis, characterized in that the grating (30) is arranged in a supply box near the tapping.
- 15 *[Handwritten signature]* 14. Heat exchanger according to any one of Claims 1 to 13, characterized in that the supply line contains several gratings (30).
- 20 15. Heat exchanger according to any one of Claims 1 to 14, comprising two supply lines, characterized in that each line contains at least one grating (30).
- 25 16. Heat exchanger according to any one of Claims 1 to 15, characterized in that the said fluid circulating through the fluid supply line is in the gaseous state.
- 30 17. Reboiler-condenser, characterized in that it comprises one heat exchanger according to any one of claims 1 to 16.
- 35 18. Reboiler-condenser of an air separator unit, characterized in that it comprises at least one heat exchanger according to any one of Claims 1 to 16.

Heat exchanger with multiple exchanger blocks
with uniform fluid distribution supply line and
reboiler-condenser comprising such an exchanger

in the name of:

L'AIR LIQUIDE, SOCIETE ANONYME POUR L'ETUDE ET
L'EXPLOITATION DES PROCEDES GEORGES CLAUDE

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ABSTRACT

In such an exchanger, in which the blocks have fluid inlet openings in communication with the interior space of a supply box which runs alongside the block and communicates with at least one analogous box of an adjacent block to form a fluid supply line, in order to even out the distribution of fluid between the openings of the blocks, the supply line contains at least one grating (30) leaving perforations (301) and solid parts (302) which are distributed in such a way as to create pressure drops which are such that the flow velocities of the fluid in the inlet openings downstream of the grating have similar values.

Figure 5.